

What is claimed:

1. A fusion protein comprising a protein containing a modular protein binding domain (MPBD), wherein the MPBD is substituted by a single chain antibody.

2. The fusion protein of claim 1, wherein the MPBD is selected from the group of domains consisting of src homology 2 (SH2), src homology 3 (SH3) phosphotyrosine binding (PTB) WW, PDZ, 14.3.3, WD40, EH and Lim.

3. The fusion protein of claim 1, wherein the protein containing a MPBD is a tyrosine kinase.

4. The fusion protein of claim 4, wherein the MPBD is src homology 3.

5. A gene encoding the fusion protein of claims 1, 2, 3 or 4.

6. A vector containing the gene of claim 5 operably linked to a promoter.

7. A fusion protein comprising a protein containing a binding site that binds to a modular protein binding domain (MPBD), wherein a linear epitope that binds to the MPBD within the binding site is substituted by at least one antigenic epitope of 6-20 amino acids that binds to an antibody.

8. The fusion protein of claim 7, wherein the antigenic epitope binds to a single chain antibody, wherein said single chain antibody has been substituted for an MPBD of a protein containing said MPBD.

9. The fusion protein of claim 8, wherein there are multiple copies of the antigenic epitope present.

10. The fusion protein of claim 8, wherein there are 3-10 copies of the antigenic epitope present.

11. A gene encoding the fusion protein of claims 7, 8, 9 or 10.

12. A vector containing the gene of claim 11, operably linked to a promoter.

13. A cell transformed by the vector of claim 6.

14. The transformed cell of claim 13, further transformed by the vector of claim 12.

15. A cell co-transfected by the vectors of claim 6 and 12.

16. A library of proteins wherein said proteins contain modular protein binding domain, and each protein has been fused to by a single chain antibody.

17. A library of proteins, wherein said proteins each contain a binding site that binds to a modular protein binding domain (MPBD) and wherein said proteins have been fused to at least one copy of an antigenic epitope of 6-20 amino acids that binds to an antibody.

18. A library of nucleic acid sequences encoding the library of claim 16.

19. A library of nucleic acid sequences encoding the library of claim 17.

20. An assay for determining the activity of a protein-protein interaction, comprising:

- (a) (1) transforming a cell by the vector of claim 6, and a second vector, wherein said second vector contains a gene encoding a fusion protein that has a binding site that binds to a MPBD,

wherein a linear epitope that binds to the MPBD, wherein said binding site is substituted by at least one copy of an epitope of 6-20 amino acids that binds to the single chain antibody that has been substituted by the MPBD of the fusion protein encoded by the first vector or

- (2) transforming said cell by the vector of claim 12, and a second vector containing a gene encoding a fusion protein containing a MPBD, wherein the MPBD is substituted by a single claim antibody that binds to the antigenic epitope expressed by said first vector;

- (b) culturing the transformed cell;
- (c) and comparing the activity to a base line control; and
- (d) looking at any change in biological activity to determine the activity of the protein-protein interaction.

21. The assay of claim 20, wherein the cell used does not express the protein containing the MPBD of the fusion protein encoded by the gene in the vector of claim 1.

22. The assay of claim 20, wherein the control constitutes at least two cells wherein each of said cells is transformed by one of the two vectors but not the other.

23. An assay for determining the activity of a protein-protein interaction, comprising:

- (a) (1) transforming a cell by a vector, wherein said vector contains a gene encoding a fusion protein that has a binding site that binds to a modular protein binding domain (MPBD), wherein a linear epitope that binds to the MPBD in said binding site is replaced by at least one copy of an antigenic epitope of 6-20 amino acids that binds to a single chain antibody, and a vector containing a nucleic acid sequence selected from the library of claim 18, operably linked to a

promoter wherein said single chain antibody binds to said antigenic epitope, or

- (2) transforming said cell by a vector containing a gene encoding a fusion protein containing a MPBD, wherein the MPBD is substituted by a single chain antibody that binds to the antigenic epitope, and a vector containing a nucleic acid sequence selected from the library of claim 17, operably linked to a promoter, wherein said antigenic epitope binds to said single chain antibody vector;

- (b) culturing the transformed cell;
- (c) and comparing the activity to a base line control; and
- (d) looking at any change in biological activity to determine the activity of the protein-protein interaction.

24. An assay for determining molecules that interact with a protein-protein complex comprising;

- (a) extracellularly combining the fusion protein of claim 9, with a fusion protein having a MPBD, wherein the MPBD has been substituted by a single chain antibody that specifically binds to at least one copy of the epitope of the protein of claim 9;

- (b) adding a test molecule; and
- (c) comparing the effect on the binding of the complex with a baseline control of the complex of the two fusion proteins.